CLAIMS

What is claimed is:

1. A physical layer of a first device that is connected to cable of an Ethernet network, comprising:

a digital signal processor (DSP) coupled to said cable that receives and decodes first signals on said cable and that codes and transmits second signals on said cable; and

an autonegotiation controller that communicates with said DSP and that includes a cable detector that determines a first number of pairs of twisted pair wires of said cable that are operable.

2. The physical layer of claim 1 wherein said cable includes at least one of two pairs of twisted pair wires and four pairs of twisted pair wires

3. The physical layer of claim 1 wherein said autonegotiation controller includes a speed adjuster that masks an advertised speed of said first device when said cable detector determines that said first number is less than the number of twisted pair wires required to support a requested speed of said first device.

4. The physical layer of claim 3 wherein said requested speed is 1 Gigabit per second and said first number is two.

5. The physical layer of claim 3 wherein said speed adjuster does not mask said advertised speed of said first device when said first number is greater than or equal to the number of twisted pair wires that are required to support said requested speed.

6. The physical layer of claim 3 wherein said speed adjuster does not mask said advertised speed of said first device when said requested speed is less than 1 gigabit per second.

7. The physical layer of claim 1 wherein a pair of twisted pair wires are inoperable if signals are not received on said pair.

8. The physical layer of claim 1 wherein a pair of twisted pair wires are inoperable if signals received by said pair cannot be decoded correctly by said DSP.

9. The physical layer of claim 3 wherein said speed adjuster increments a first counter when said cable detector determines that said first number is equal to two and autonegotiation fails.

10. The physical layer of claim 9 wherein said speed adjuster resets and sets said first counter equal to zero when said first counter is equal to a first limit.

11. The physical layer of claim 1 wherein said cable detector includes a maxwait timer and has a first state.

12. The physical layer of claim 11 wherein said cable detector transitions from said first state to a second state when said DSP receives signals on at least one of a first pair and a second pair of twisted pair wires.

13. The physical layer of claim 12 wherein said cable detector transitions from said second state to a third state when said DSP receives and decodes signals on said first and second pairs of twisted pair wires.

14. The physical layer of claim 13 wherein said cable detector transitions from said second state to a fourth state when said DSP receives signals on at least one of said first and second pairs but not said third and fourth pairs and said maxwait timer times out.

15. The physical layer of claim 14 wherein said cable detector transitions from said third state to said fourth state when said DSP receives and decodes signals on said first and second pairs but does not receive signals on said third and fourth pairs and said maxwait timer times out.

16. The physical layer of claim 15 wherein said cable detector includes a slave counter that is incremented each time said cable detector transitions to said fourth state.

17. The physical layer of claim 16 wherein said cable detector returns to said first state when said slave counter is less than slimit and said cable detector sets said first number equal to two when said slave counter equals slimit.

18. The physical layer of claim 17 wherein said cable detector transitions from said first state to a fifth state when said maxwait timer times out and said DSP fails to detect signals on said first pair and said second pair.

19. The physical layer of claim 18 wherein said cable detector includes a master counter that is incremented each time that said cable detector transitions to said fifth state.

20. The physical layer of claim 19 wherein said cable detector returns to said first state when said master counter is less than mlimit and said cable detector sets said first number equal to two when said master counter equals mlimit.

21. The physical layer of claim 20 wherein said cable detector sets said first number equal to four when said DSP receives and decodes signals on said first, second, third and fourth pairs.

22. The physical layer of claim 21 wherein said cable detector transitions from said second state to a sixth state when said maxwait timer times out, said DSP does not receive and decode signals on said first and second pairs of twisted pair wires, and said DSP does not receive signals on at least one of said first and second pairs but not said third and fourth pairs.

23. The physical layer of claim 22 wherein said cable detector transitions from said third state to a sixth state when said maxwait timer times out and said DSP does not receive and decode signals on said first, second, third and fourth pairs.

24. The physical layer of claim 23 further comprising a status indicator that notifies said first network device when said requested speed is being masked.

25. A physical layer of a first device that is connected to cable of an Ethernet network, comprising:

cable including at least two pairs of twisted pair wires;

a digital signal processor (DSP) coupled to said cable that receives and decodes first signals on said cable and that codes and transmits second signals on said cable; and

an autonegotiation controller that communicates with said DSP and that includes a cable detector that determines a first number of pairs of twisted pair wires of said cable that are operable and a speed adjuster that masks an advertised speed of said first device when said cable detector determines that said first number is less than a number of twisted pair wires that are required to support a requested speed of said first device.

26. The physical layer of claim 25 wherein said speed adjuster does not mask said advertised speed of said first device when said first number is four.

27. The physical layer of claim 25 wherein said speed adjuster does not mask said advertised speed of said first device when said requested speed is less than 1 gigabit per second.

28. The physical layer of claim 25 wherein a pair of twisted pair wires are inoperable when at least one of signals are not received on said pair and signals received by said pair cannot be decoded correctly by said DSP.

29. The physical layer of claim 25 wherein said cable detector includes a maxwait timer.

30. The physical layer of claim 29 wherein said cable detector increments a slave counter when said maxwait timer times out and said DSP receives signals on first and second pairs of twisted pair wires but does not receive signals on third and fourth pairs of twisted pair wires

31. The physical layer of claim 30 wherein said cable detector increments said slave counter when said maxwait timer times out and said DSP receives and decodes signals on said first and second pairs but does not receive signals on said third and fourth pairs of twisted pair wires.

32. The physical layer of claim 31 wherein said cable detector sets said first number equal to two when said slave counter is equal to slimit.

33. The physical layer of claim 32 further comprising a status indicator that notifies said first network device when said first speed is being masked.

34. A method for operating a physical layer of a first device that is connected to cable of an Ethernet network, comprising:

coupling a digital signal processor (DSP) to said cable;

receiving and decoding first signals on said cable;

coding and transmitting second signals on said cable;

communicating with said DSP using an autonegotiation controller; and

detecting a first number of pairs of twisted pair wires of said cable that are operable with a cable detector associated with said autonegotiation controller.

35. The method of claim 34 wherein said cable includes at least one of two pairs of twisted pair wires and four pairs of twisted pair wires

36. The method of claim 34 further comprising masking an advertised speed of said first device using a speed adjuster when said cable detector determines that said first number is less than a number of twisted pair wires required to support a requested speed of said first device.

37. The method of claim 36 wherein said requested speed is 1 Gigabit per second and said first number is two.

38. The method of claim 36 wherein said speed adjuster does not mask said advertised speed of said first device when said first number is four.

39. The method of claim 36 wherein said speed adjuster does not mask said advertised speed of said first device when said requested speed is less than 1 gigabit per second.

40. The method of claim 34 further comprising determining that a pair of twisted pair wires are inoperable if signals are not received on said pair.

41. The method of claim 35 further comprising determining that a pair of twisted pair wires are inoperable if signals received by said pair cannot be decoded correctly by said DSP.

42. The method of claim 36 further comprising incrementing a first counter using said speed adjuster when said cable detector determines that said first number is equal to two and autonegotiation fails.

43. The method of claim 42 further comprising setting said first counter equal to zero using said speed adjuster when said first counter is equal to a first limit.

44. The method of claim 34 wherein said cable detector includes a maxwait timer and has a first state.

45. The method of claim 44 further comprising transitioning from said first state to a second state of said cable detector when said DSP receives signals on at least one of a first pair and a second pair of twisted pair wires.

46. The method of claim 45 further comprising transitioning from said second state to a third state of said cable detector when said DSP receives and decodes signals on said first and second pairs of twisted pair wires.

47. The method of claim 46 further comprising transitioning from said second state to a fourth state of said cable detector when said DSP receives signals on at least one of said first and second pairs but not said third and fourth pairs and said maxwait timer times out.

48. The method of claim 47 further comprising transitioning from said third state to said fourth state when said DSP receives and decodes signals on said first and second pairs but does not receive signals on said third and fourth pairs and said maxwait timer times out.

49. The method of claim 48 wherein said cable detector includes a slave counter and further comprising incrementing said slave counter each time that said cable detector transitions to said fourth state.

50. The method of claim 49 further comprising:

returning to said first state when said slave counter is less than slimit; and

setting said first number equal to two when said slave counter equals slimit.

51. The method of claim 50 further comprising transitioning from said first state to a fifth state of said cable detector when said maxwait timer times out and said DSP fails to detect signals on said first pair and said second pair.

52. The method of claim 51 wherein said cable detector includes a master counter that is incremented each time that said cable detector transitions to said fifth state.

53. The method of claim 52 further comprising:

returning to said first state when said master counter is less than mlimit; and

setting said first number equal to two when said master counter equals mlimit.

54. The method of claim 53 wherein said cable detector sets said first number equal to four when said DSP receives and decodes signals on said first, second, third and fourth pairs.

55. The method of claim 54 further comprising transitioning from said second state to a sixth state of said cable detector when said maxwait timer times out and said DSP does not receive and decode signals on said first and second pairs of twisted pair wires.

56. The method of claim 55 further comprising transitioning from said third state to a sixth state of said cable detector when said maxwait timer times out and said DSP does not receive and decode signals on said first, second, third and fourth pairs.

57. The method of claim 56 further comprising generating a status indicator that notifies said first network device when said requested speed is being masked.

58. A physical layer of a first device that is connected to cable of an Ethernet network, comprising:

signal processing means coupled to said cable for receiving and decoding first signals on said cable and for coding and transmitting second signals on said cable; and

autonegotiation means for communicating with said signal processing means and including cable detector means for determining a first number of pairs of twisted pair wires of said cable that are operable.

59. The physical layer of claim 58 wherein said cable includes at least one of two pairs of twisted pair wires and four pairs of twisted pair wires

60. The physical layer of claim 58 wherein said autonegotiation means includes speed adjustment means for masking an advertised speed of at least one of said first and second devices when said cable detector means determines that said first number is less than the number of twisted pair wires required for a requested speed of said first device.

61. The physical layer of claim 60 wherein said requested speed is 1 Gigabit per second and said first number is two.

62. The physical layer of claim 60 wherein said speed adjustment means does not mask said advertised speed of said first device when said first number is four.

63. The physical layer of claim 60 wherein said speed adjustment means does not mask said advertised speed of said first device when said requested speed is less than said first speed.

64. The physical layer of claim 58 wherein a pair of twisted pair wires are inoperable if signals are not received on said pair.

65. The physical layer of claim 58 wherein a pair of twisted pair wires are inoperable if signals received by said pair cannot be decoded correctly by said signal processing means.

66. The physical layer of claim 60 wherein said speed adjuster increments a first counter when said cable detector means determines that said first number is equal to two and autonegotiation fails.

67. The physical layer of claim 66 wherein said speed adjustment means resets and sets said first counter equal to zero when said first counter is equal to a first limit.

68. The physical layer of claim 58 wherein said cable detector means includes a maxwait timer and has a first state.

69. The physical layer of claim 68 wherein said cable detector means transitions from said first state to a second state when said signal processing means receives signals on at least one of a first pair and a second pair of twisted pair wires.

70. The physical layer of claim 69 wherein said cable detector means transitions from said second state to a third state when said signal processing means receives and decodes signals on said first and second pairs of twisted pair wires.

71. The physical layer of claim 70 wherein said cable detector means transitions from said second state to a fourth state when said signal processing means receives signals on at least one of said first and second pairs but not said third and fourth pairs and said maxwait timer times out.

72. The physical layer of claim 71 wherein said cable detector means transitions from said third state to said fourth state when said signal processing means receives and decodes signals on said first and second pairs but does not receive signals on said third and fourth pairs and said maxwait timer times out.

73. The physical layer of claim 72 wherein said cable detector means includes a slave counter that is incremented each time said cable detector means transitions to said fourth state.

74. The physical layer of claim 73 wherein said cable detector means returns to said first state when said slave counter is less than slimit and said cable detector means sets said first number equal to two when said slave counter equals slimit.

75. The physical layer of claim 74 wherein said cable detector means transitions from said first state to a fifth state when said maxwait timer times out and said signal processing means fails to detect signals on said first pair and said second pair.

76. The physical layer of claim 75 wherein said cable detector means includes a master counter that is incremented each time that said cable detector means transitions to said fifth state.

77. The physical layer of claim 76 wherein said cable detector means returns to said first state when said master counter is less than mlimit and said cable detector means sets said first number equal to two when said master counter equals mlimit.

78. The physical layer of claim 77 wherein said cable detector means sets said first number equal to four when said signal processing means receives and decodes signals on said first, second, third and fourth pairs.

79. The physical layer of claim 78 wherein said cable detector means transitions from said second state to a sixth state when said maxwait timer times out and said signal processing means does not receive and decode signals on said first and second pairs of twisted pair wires.

80. The physical layer of claim 79 wherein said cable detector means transitions from said third state to a sixth state when said maxwait timer times out and said signal processing means does not receive and decode signals on said first, second, third and fourth pairs.

81. The physical layer of claim 80 further comprising status indicating means for notifying said first network device when said first speed is being masked.

82. An Ethernet network, comprising:

a first network device with a first physical layer including a first digital signal processor (DSP) coupled to cable that receives and decodes first signals on said cable and that codes and transmits second signals on said cable, and a first autonegotiation controller that communicates with said first DSP and that includes a first cable detector that determines a first number of pairs of twisted pair wires of said cable that are operable; and

a second network device with a second physical layer including a second DSP coupled to said cable that receives and decodes said second signals on said cable and that codes and transmits said first signals on said cable.

83. The Ethernet network of claim 82 wherein said second network device includes a second autonegotiation controller that communicates with said second DSP and that includes a second cable detector that determines a first number of pairs of twisted pair wires of said cable that are operable.

84. The Ethernet network of claim 82 wherein said cable includes at least one of two pairs of twisted pair wires and four pairs of twisted pair wires

85. The Ethernet network of claim 82 wherein said first autonegotiation controller includes a first speed adjuster that masks an advertised speed of said first device when said first cable detector determines that said first number is equal to two and when a first speed is requested by said first device.

86. The Ethernet network of claim 85 wherein said first speed is 1 Gigabit per second.

87. The Ethernet network of claim 85 wherein said first speed adjuster does not mask said advertised speed of said first device when said first number is four.

88. The Ethernet network of claim 85 wherein said first speed adjuster does not mask said advertised speed of said first device when said requested speed is less than said first speed.

89. The Ethernet network of claim 83 wherein a pair of twisted pair wires are inoperable if signals are not received on said pair.

90. The Ethernet network of claim 83 wherein a pair of twisted pair wires are inoperable if signals received by said pair cannot be decoded correctly by said first DSP.

91. The Ethernet network of claim 85 wherein said first speed adjuster increments a first counter when said first cable detector determines that said first number is equal to two and autonegotiation fails.

92. The Ethernet network of claim 91 wherein said first speed adjuster resets and sets said first counter equal to zero when said first counter is equal to a first limit.

93. The Ethernet network of claim 83 wherein said first cable detector includes a maxwait timer and has a first state.

94. The Ethernet network of claim 93 wherein said first cable detector transitions from said first state to a second state when said first DSP receives signals on at least one of a first pair and a second pair of twisted pair wires.

95. The Ethernet network of claim 94 wherein said first cable detector transitions from said second state to a third state when said first DSP receives and decodes signals on said first and second pairs of twisted pair wires.

96. The Ethernet network of claim 95 wherein said first cable detector transitions from said second state to a fourth state when said first DSP receives signals on at least one of said first and second pairs but not said third and fourth pairs and said maxwait timer times out.

97. The Ethernet network of claim 96 wherein said first cable detector transitions from said third state to said fourth state when said first DSP receives and decodes signals on said first and second pairs but does not receive signals on said third and fourth pairs and said maxwait timer times out.

98. The Ethernet network of claim 97 wherein said first cable detector includes a slave counter that is incremented each time said first cable detector transitions to said fourth state.

99. The Ethernet network of claim 98 wherein said first cable detector returns to said first state when said slave counter is less than slimit and said first cable detector sets said first number equal to two when said slave counter equals slimit.

100. The Ethernet network of claim 99 wherein said first cable detector transitions from said first state to a fifth state when said maxwait timer times out and said first DSP fails to detect signals on said first pair and said second pair.

101. The Ethernet network of claim 100 wherein said first cable detector includes a master counter that is incremented each time that said first cable detector transitions to said fifth state.

102. The Ethernet network of claim 101 wherein said first cable detector returns to said first state when said master counter is less than mlimit and said cable detector sets said first number equal to two when said master counter equals mlimit.

103. The Ethernet network of claim 102 wherein said first cable detector sets said first number equal to four when said first DSP receives and decodes signals on said first, second, third and fourth pairs.

104. The Ethernet network of claim 103 wherein said first cable detector transitions from said second state to a sixth state when said maxwait timer times out and said first DSP does not receive and decode signals on said first and second pairs of twisted pair wires.

105. The Ethernet network of claim 104 wherein said first cable detector transitions from said third state to a sixth state when said maxwait timer times out and said first DSP does not receive and decode signals on said first, second, third and fourth pairs.

106. The Ethernet network of claim 105 further comprising a status indicator that notifies said first network device when said first speed is being masked.

107. A network device that is connected to cable of an Ethernet network, comprising:

a physical layer including:

a digital signal processor (DSP) coupled to said cable that receives and decodes first signals on said cable and that codes and transmits second signals to said second device on said cable; and

an autonegotiation controller that communicates with said DSP and that includes a cable detector that determines a first number of pairs of twisted pair wires of said cable that are operable.

108. The network device of claim 107 wherein said first signals are transmitted by a second network device.

109. The network device of claim 107 wherein said cable includes at least one of two pairs of twisted pair wires and four pairs of twisted pair wires

110. The network device of claim 107 wherein said autonegotiation controller includes a speed adjuster that masks an advertised speed of said first network device when said cable detector determines that said first number is equal to two and that a first speed is requested by said first network device.

111. The network device of claim 110 wherein said first speed is 1 Gigabit per second.

112. The network device of claim 110 wherein said speed adjuster does not mask said advertised speed of said first network device when said first number is four.

113. The network device of claim 110 wherein said speed adjuster does not mask said advertised speed of said first network device when said requested speeds are less than said first speed.

114. The network device of claim 109 wherein a pair of twisted pair wires are inoperable if signals are not received on said pair.

115. The network device of claim 109 wherein a pair of twisted pair wires are inoperable if signals received by said pair cannot be decoded correctly by said DSP.

116. The network device of claim 110 wherein said speed adjuster increments a first counter when said cable detector determines that said first number is equal to two and autonegotiation fails.

117. The network device of claim 116 wherein said speed adjuster resets and sets said first counter equal to zero when said first counter is equal to a first limit.

118. The network device of claim 117 wherein said cable detector includes a maxwait timer and has a first state.

119. The network device of claim 118 wherein said cable detector transitions from said first state to a second state when said DSP receives signals on at least one of a first pair and a second pair of twisted pair wires.

120. The network device of claim 119 wherein said cable detector transitions from said second state to a third state when said DSP receives and decodes signals on said first and second pairs of twisted pair wires.

121. The network device of claim 120 wherein said cable detector transitions from said second state to a fourth state when said DSP receives signals on at least one of said first and second pairs but not said third and fourth pairs and said maxwait timer times out.

122. The network device of claim 121 wherein said cable detector transitions from said third state to said fourth state when said DSP receives and decodes signals on said first and second pairs but does not receive signals on said third and fourth pairs and said maxwait timer times out.

123. The network device of claim 122 wherein said cable detector includes a slave counter that is incremented each time said cable detector transitions to said fourth state.

124. The network device of claim 123 wherein said cable detector returns to said first state when said slave counter is less than slimit and said cable detector sets said first number equal to two when said slave counter equals slimit.

125. The network device of claim 124 wherein said cable detector transitions from said first state to a fifth state when said maxwait timer times out and said DSP fails to detect signals on said first pair and said second pair.

126. The network device of claim 125 wherein said cable detector includes a master counter that is incremented each time that said cable detector transitions to said fifth state.

127. The network device of claim 126 wherein said cable detector returns to said first state when said master counter is less than mlimit and said cable detector sets said first number equal to two when said master counter equals mlimit.

128. The network device of claim 127 wherein said cable detector sets said first number equal to four when said DSP receives and decodes signals on said first, second, third and fourth pairs.

129. The network device of claim 128 wherein said cable detector transitions from said second state to a sixth state when said maxwait timer times out and said DSP does not receive and decode signals on said first and second pairs of twisted pair wires.

130. The network device of claim 129 wherein said cable detector transitions from said third state to a sixth state when said maxwait timer times out and said DSP does not receive and decode signals on said first, second, third and fourth pairs.

131. The network device of claim 130 further comprising a status indicator that notifies said first network device when said first speed is being masked.

132. A software method that is executed by a processor and memory for operating a physical layer of a first network device that is connected to cable of an Ethernet network, comprising:

receiving and decoding first signals on said cable from a second device using a digital signal processor (DSP);

coding and transmitting second signals to said second device on said cable using said DSP; and

detecting a first number of pairs of twisted pair wires of said cable that are operable.

133. The software method of claim 132 wherein said cable includes at least one of two pairs of twisted pair wires and four pairs of twisted pair wires

134. The software method of claim 132 further comprising masking an advertised speed of said first device when said first number is less than a number of twisted pair wires that are required for a requested speed of said first device.

135. The software method of claim 134 wherein said first speed is 1 Gigabit per second.

136. The software method of claim 134 wherein said advertised speed of said first device is not masked when said first number is four.

137. The software method of claim 134 wherein said advertised speed of said first device is not masked when said requested speeds are less than said first speed.

138. The software method of claim 133 further comprising designating a pair of twisted pair wires inoperable if signals are not received on said pair.

139. The software method of claim 133 further comprising designating a pair of twisted pair wires inoperable if signals received by said pair cannot be decoded correctly by said DSP.

140. The software method of claim 134 further comprising incrementing a first counter when said first number is equal to two and autonegotiation fails.

141. The software method of claim 140 further comprising setting said first counter equal to zero when said first counter is equal to a first limit.

142. The software method of claim 132 further comprising:

providing a maxwait timer; and

initializing in a first state.

143. The software method of claim 142 further comprising transitioning from said first state to a second state when said DSP receives signals on at least one of a first pair and a second pair of twisted pair wires.

144. The software method of claim 143 further comprising transitioning from said second state to a third state when said DSP receives and decodes signals on said first and second pairs of twisted pair wires.

145. The software method of claim 144 further comprising transitioning from said second state to a fourth state when said DSP receives signals on at least one of said first and second pairs but not said third and fourth pairs and said maxwait timer times out.

146. The software method of claim 145 further comprising transitioning from said third state to said fourth state when said DSP receives and decodes signals on said first and second pairs but does not receive signals on said third and fourth pairs and said maxwait timer times out.

147. The software method of claim 146 further comprising:

providing a slave counter; and

incrementing said slave counter each time that said cable detector transitions to said fourth state.

148. The software method of claim 147 further comprising:

returning to said first state when said slave counter is less than slimit; and

setting said first number equal to two when said slave counter equals slimit.

149. The software method of claim 148 further comprising transitioning from said first state to a fifth state when said maxwait timer times out and said DSP fails to detect signals on said first pair and said second pair.

150. The software method of claim 149 further comprising incrementing a master counter each time that said cable detector transitions to said fifth state.

151. The software method of claim 150 further comprising:

returning to said first state when said master counter is less than mlimit; and

setting said first number equal to two when said master counter equals mlimit.

152. The software method of claim 151 further comprising setting said first number equal to four when said DSP receives and decodes signals on said first, second, third and fourth pairs.

153. The software method of claim 152 further comprising transitioning from said second state to a sixth state when said maxwait timer times out and said DSP does not receive and decode signals on said first and second pairs of twisted pair wires.

154. The software method of claim 153 further comprising transitioning from said third state to a sixth state when said maxwait timer times out and said DSP does not receive and decode signals on said first, second, third and fourth pairs.

155. The software method of claim 154 further comprising generating a status indicator that notifies said first network device when said first speed is being masked.

156. A method for operating a physical layer of a first device that is connected to cable of an Ethernet network, comprising:

coupling said cable to a digital signal processor (DSP);

receiving and decoding first signals on said cable using said DSP;

coding and transmitting second signals on said cable using said DSP;

determining a first number of pairs of twisted pair wires of said cable that are operable; and

masking an advertised speed of said first device when said first number is less than a number of twisted pair wires that are required to support a requested speed of said first device.

157. The method of claim 156 wherein said advertised speed of said first device is not masked when said first number is four.

158. The method of claim 156 wherein said advertised speed of said first device is not masked when said requested speed is less than 1 gigabit per second.

159. The method of claim 156 further comprising determining that a pair of twisted pair wires are inoperable when at least one of signals are not received on said pair and signals received by said pair cannot be decoded correctly by said DSP.

160. The method of claim 156 further comprising starting a maxwait timer.

161. The method of claim 160 further comprising incrementing a slave counter when said maxwait timer times out and said DSP receives signals on first and second pairs of twisted pair wires but does not receive signals on third and fourth pairs of twisted pair wires

162. The method of claim 161 further comprising incrementing said slave counter when said maxwait timer times out and said DSP receives and decodes signals on said first and second pairs but does not receive signals on said third and fourth pairs of twisted pair wires.

163. The method of claim 162 further comprising setting said first number equal to two when said slave counter is equal to slimit.

164. The method of claim 163 further comprising generating a status signal that notifies said first network device when said first speed is being masked.

165. A software method for operating a physical layer of a first device that is connected to cable of an Ethernet network, comprising:

coupling said cable to a digital signal processor (DSP);

receiving and decoding first signals on said cable using said DSP;

coding and transmitting second signals on said cable using said DSP;

determining a first number of pairs of twisted pair wires of said cable that are operable; and

masking an advertised speed of said first device when said first number is less than a number of twisted pair wires that are required to support a requested speed of said first device.

166. The software method of claim 165 wherein said advertised speed of said first device is not masked when said first number is four.

167. The software method of claim 165 wherein said advertised speed of said first device is not masked when said requested speed is less than 1 gigabit per second.

168. The software method of claim 165 further comprising determining that a pair of twisted pair wires are inoperable when at least one of signals are not received on said pair and signals received by said pair cannot be decoded correctly by said DSP.

169. The software method of claim 165 further comprising starting a maxwait timer.

170. The software method of claim 169 further comprising incrementing a slave counter when said maxwait timer times out and said DSP receives signals on first and second pairs of twisted pair wires but does not receive signals on third and fourth pairs of twisted pair wires

171. The software method of claim 170 further comprising incrementing said slave counter when said maxwait timer times out and said DSP receives and decodes signals on said first and second pairs but does not receive signals on said third and fourth pairs of twisted pair wires.

172. The software method of claim 171 further comprising setting said first number equal to two when said slave counter is equal to slimit.

173. The software method of claim 172 further comprising generating a status signal that notifies said first network device when said first speed is being masked.

174. A physical layer of a first device that is connected to cable of an Ethernet network, comprising:

signal processing means coupled to said cable for receiving and decoding first signals on said cable and for coding and transmitting second signals on said cable; and

autonegotiation control means for communicating with said signal processing means and including cable detection means for determining a first number of pairs of twisted pair wires of said cable that are operable and speed adjusting means for masking an advertised speed of said first device when said cable detection means determines that said first number is less than a number of twisted pair wires that are required to support a requested speed of said first device.

175. The physical layer of claim 174 wherein said speed adjusting means does not mask said advertised speed of said first device when said first number is four.

176. The physical layer of claim 174 wherein said speed adjusting means does not mask said advertised speed of said first device when said requested speed is less than 1 gigabit per second.

177. The physical layer of claim 174 wherein a pair of twisted pair wires are inoperable when at least one of signals are not received on said pair and signals received by said pair cannot be decoded correctly by said signal processing means.

178. The physical layer of claim 174 wherein said cable detection means includes a maxwait timer.

179. The physical layer of claim 178 wherein said cable detection means increments a slave counter when said maxwait timer times out and said signal processing means receives signals on first and second pairs of twisted pair wires but does not receive signals on third and fourth pairs of twisted pair wires

180. The physical layer of claim 179 wherein said cable detection means increments said slave counter when said maxwait timer times out and said signal processing means receives and decodes signals on said first and second pairs but does not receive signals on said third and fourth pairs of twisted pair wires.

181. The physical layer of claim 180 wherein said cable detection means sets said first number equal to two when said slave counter is equal to slimit.

182. The physical layer of claim 181 further comprising status indicating means for notifying said first network device when said first speed is being masked.